

# **Monitoring Report for the Northern Pike Containment System at the Outlet of Lake Davis on Big Grizzly Creek**

Prepared for  
**Department of Fish & Game**

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# Introduction

This Monitoring Report for the Lake Davis Northern Pike Containment System describes environmental monitoring that occurred before, during and after construction of the containment system at the outlet of Lake Davis.

## Pre-construction monitoring

### Wildlife

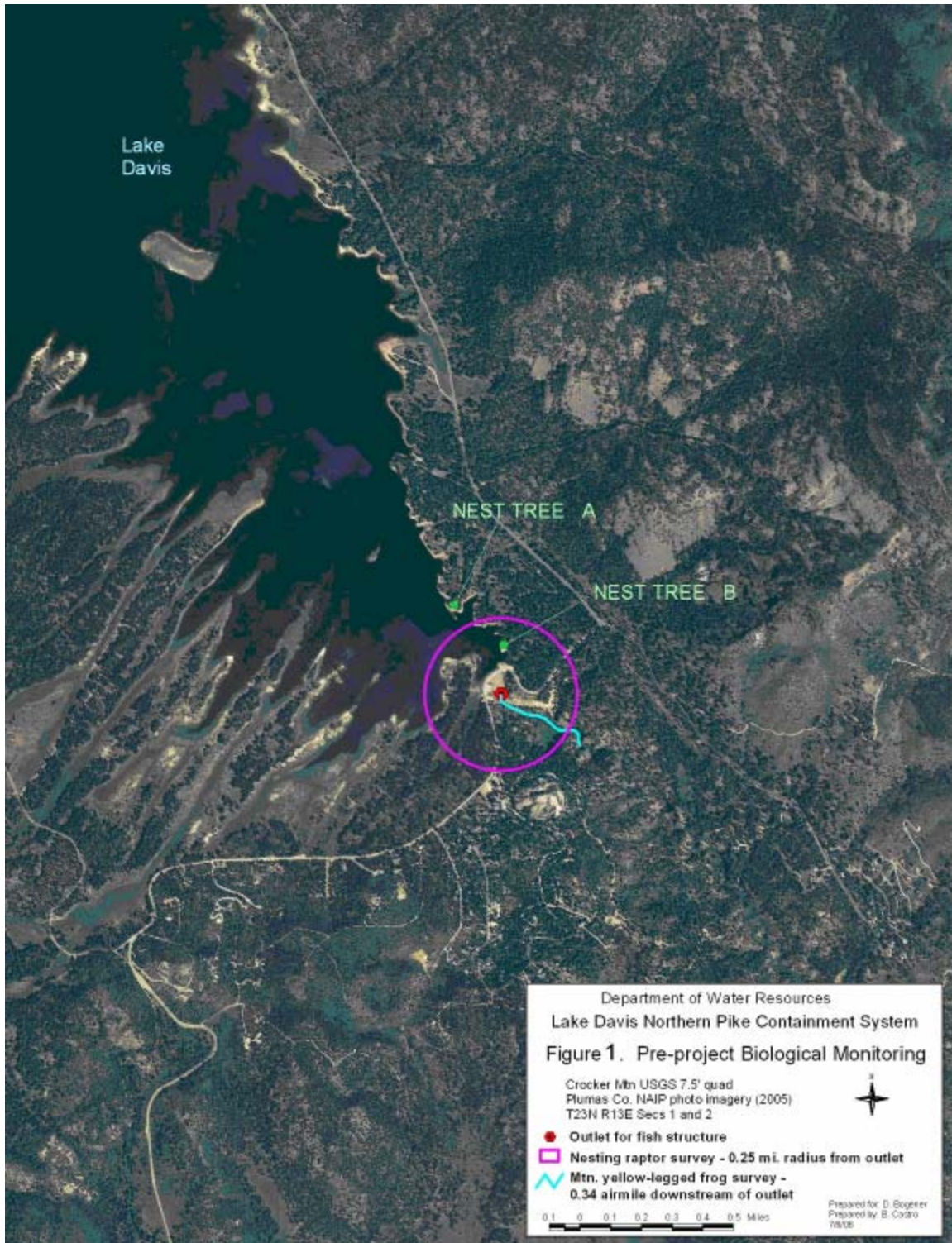
#### Birds:

Sensitive species potentially found in the area, which were the focus of surveys, are raptors and willow flycatchers. DWR conducted seven visual raptor nest surveys within ¼ mile of the project location at weekly intervals between May 18 and June 27, 2006, which involved examining all potentially suitable nest trees and cliff nest sites with binoculars and/or spotting scope.

Three raptor nests in two trees were identified during the course of the surveys and were mapped on color aerial photos (Figure 1). All three nests were constructed by osprey and were located on the shoreline of Lake Davis, and appear to all be used by only one osprey pair. No incubation or suspected incubation was observed at any of the three nest sites; ospreys typically initiate incubation by late June. The observed pair of ospreys was seen flying over Big Grizzly Creek on three of the seven survey dates and perching immediately downstream from the project area on May 31, suggesting that some foraging use of Big Grizzly Creek may occur.

Impacts of the project on these ospreys were minimal. None of the three identified nest sites were within direct line-of sight of the project location, and the project generated much less noise and human disturbance than the ongoing traffic and recreational activity that is routine for the area: for example, a heavily used fishing access trail runs from the Big Grizzly Dam to a nearby campground directly beneath the currently-used nest.

Figure 1. Osprey Nest Locations



The project did not involve removal of any willows downstream from the project footprint. Therefore, no DFG protocol willow flycatcher surveys were conducted.

#### Amphibians:

DWR conducted field surveys for Foothill and Mountain Yellow-legged Frogs on May 18, 23 and 31, 2006; and on June 8, 14, 21, 27, 2006 in Big Grizzly Creek from the Big Grizzly Dam outlet structure to a point approximately 0.34 miles downstream. All surveys were conducted according to DFG-approved survey protocols, which involve timed visual surveys of the stream, banks, and adjacent uplands for all life stages of frogs.

No life-stage of any amphibian species was identified during any of the seven frog surveys; however, large numbers of young western toad were observed during the June 27, 2006 raptor survey along the wetted low-gradient shoreline of Lake Davis. Sub-sampling indicated over 2,300 toads per mile of bank.

#### Vegetation

DWR staff conducted pre-project plant surveys on September 13 and October 20, 2005. The project footprint is in a highly disturbed area that contains very little vegetation. No special-status plant species, or other plant species or habitat of concern, were found within the proposed project area.

#### Water Quality

Pre-project water quality samples were collected using approved Standard Methods (American Public Health Association 1998) on July 3, 2006 300 ft downstream of the project area, measured from the Cipolletti Weir to provide measurements of background levels of turbidity and settleable solids (Table 1).

Table 1. Pre-Project Water Quality Data

Date	Time	Turbidity (NTU)	Settleable Solids	Reason
7/3/2006	805	4.43	Less than Detection Limit	Baseline Sample

## Construction Monitoring

#### Environmental Awareness Training

DWR Environmental Scientists held an environmental awareness training session on July 5, 2006, the first day equipment was brought to the project site, which was attended by all contractor employees. Ten additional training sessions were held from July 14, 2006 through November 6, 2006 for new contractor employees that joined the project. The training sessions addressed

avoidance areas, location of staging areas, northern pike education, water quality issues, oil spill prevention, flow augmentation requirements, standard DWR environmental policies, and other permit requirements. Each attendee signed a form stating that they were provided with environmental compliance training. Copies of all permits, environmental requirements, and State policies that pertained to the work were provided to the inspector and contractor.

## Environmental Monitoring

DWR provided a trained environmental project monitor to inspect the project area throughout the construction period, which began on July 5, 2006. The project monitor was typically on-site during periods when construction activities posed a greater risk of disturbance, visiting the site at least three times per week during the first month of construction, and at least once per week for the remainder of construction activity.

The project monitor ensured that avoidance areas were clearly marked and inspected protected areas to ensure that flags remained in place. The project monitor also inspected the project area to ensure that:

- a) All equipment was stored/parked in designated areas,
- b) All construction activities occurred in designated areas,
- c) All overnight parked vehicles and stationary equipment were positioned over drip pans.
- d) Proper protocols were being followed for water use with equipment,
- e) Fire prevention and control plans were being utilized, and
- f) The site was clear of all trash.

The project monitor also performed plant and animal surveys throughout the construction period and recorded all results, which are given in Table 2.

Table 2. Summary of plant and animal inspections

Inspection	Summary of Results
Evidence of mountain yellow-legged frogs	No evidence of mountain yellow-legged frogs discovered during construction period.
Evidence of foothill yellow-legged frogs	No evidence of foothill yellow-legged frogs discovered during construction period.
Evidence of special-status plants	No evidence of special-status plants discovered during construction period
Evidence of special-status birds	Ospreys were seen flying over the work area or perched on a nearby pine on a few occasions. Minor displacement of foraging ospreys may have occurred within the immediate project vicinity. No project-related impacts to nesting ospreys occurred during the construction period.
Presence of any live animals in the immediate work zone	Raccoon, Spotted sandpiper, Stellar's jay, western toad, song sparrow, and deer were observed in the work zone. None of the animals were in any danger from construction activities.
Presence of any dead animals in the immediate work zone	No evidence of dead animals discovered in immediate work zone.
Evidence of any plant disturbance outside what is described in the Project Description	Mats were placed on top of sage and willows to prevent erosion of the west bank downstream of the weir and were effective in preventing disturbance to vegetation.

## Water Quality

Water quality samples were collected by DWR staff from either immediately downstream of the Cipolletti Weir or from 300 ft downstream of the work site during the following activities (Table 3):

- a) Dewatering of the stilling basin,
- b) Initial start-up of the 10-inch bypass line
- c) Start-up of the 10-inch bypass line after 20 minute flow cessation
- d) Flow testing of Strainers

Samples for turbidity and settleable solids were collected every 4 hours when soil material or a plume was present in surface waters. Because baseline turbidity was between 0 and 5 Nephelometric Turbidity Units (NTUs), increases from construction activity were not to exceed 1 NTU over the baseline value. However, the limit for in-water working period allowed a turbidity increase of 15 NTU over baseline turbidity as measured in surface waters 300 feet downstream from the working area. Settleable solids were measured in surface waters 300 feet downstream from the project. The limit on settleable solids in surface waters

was set not to exceed 0.1 milliliters per liter (mL/L) as a result of construction activities.

The prescribed water quality standards were exceeded on three occasions: once during the initial start-up of the bypass line and twice during flow testing of the strainers. However, in each case, settleable solids and turbidity returned to baseline conditions within 4 hours.

Table 3. Water quality parameters measured by DWR during construction.

Date	Time	Turbidity (NTU)	Settleable Solids (mL/L)	Reason
7/3/2006	805	4.43	Less than Detection Limit	Baseline Sample
7/17/2006	905	79.9	8.0*	Initial start up of bypass line
7/17/2006	1005	6.58	Less than Detection Limit	Initial start up of bypass line
7/17/2006	1400	9.56	Less than Detection Limit	Initial start up of bypass line
7/17/2006	1700	4.64	Less than Detection Limit	Initial start up of bypass line
7/25/2006	1200	11.2	Less than Detection Limit	Dewatering of the stilling basin
7/26/2006	700	5.23	Not Required	Dewatering of the stilling basin
8/1/2006	905	20.3	Less than Detection Limit	Start up of bypass line after 20 minute flow cessation
8/1/2006	1300	4.51	Not Required	Start up of bypass line after 20 minute flow cessation
9/29/2006	1215	37.7	3.5**	Flow testing of Strainers
9/29/2006	1500	5.57	Not Required	Flow testing of Strainers
11/14/2006	935	3.08	Less than Detection Limit	Flow testing of Strainers
11/14/2006	1035	3.05	Not Required	Flow testing of Strainers
11/14/2006	1115	2.51	Not Required	Flow testing of Strainers
11/14/2006	1135	6.78	Less than Detection Limit	Flow testing of Strainers
11/14/2006	1235	26.2	0.4	Flow testing of Strainers
11/14/2006	1335	18.1	Less than Detection Limit	Flow testing of Strainers
11/14/2006	1430	18.9	Less than Detection Limit	Flow testing of Strainers
11/14/2006	1530	9.24	Not Required	Flow testing of Strainers
11/15/2006	940	5.93	Not Required	Flow testing of Strainers
11/15/2006	1025	4.25	Not Required	Flow testing of Strainers
11/15/2006	1125	3.64	Not Required	Flow testing of Strainers
11/15/2006	1220	2.58	Not Required	Flow testing of Strainers
11/15/2006	1325	3.48	Not Required	Flow testing of Strainers
11/15/2006	1425	4.8	Not Required	Flow testing of Strainers
11/15/2006	1505	4.08	Not Required	Flow testing of Strainers

\*Settleable material was filamentous algae

\*\*Settleable materials were 25% coarse sands and 75% algal flock



## **Flow Cessation Mitigation and Monitoring**

DWR originally planned for two to six extended flow outages during the construction, but in fact flow was interrupted only once, for 20 minutes total. Originally, approx. 0.5 cubic feet per second (cfs) of Lake Davis water was to be pumped from Lake Davis over the spillway into Big Grizzly Creek to augment flow during outages. On August 1, 2006 the only project-related flow cessation occurred when urgent adjustments were being made to the fish grater attached to the bypass line. The outage lasted only 20 minutes and did not result in any appreciable drop of the water surface level; despite the minimal impact the outage had on water surface, downstream monitoring was conducted for evidence of fish stranding, fish stress and fish mortality, of which none was found.

## **Post-construction Activities**

### **Project Area Final Inspection**

The environmental project monitor made a final inspection of the project area after construction of the containment system was complete. The monitor ensured that the contractor had removed all equipment and trash from the project area, and removed all flagging from avoidance areas.

### **Vegetation**

The project's mitigation and monitoring compliance agreement included planting of local willow cuttings downstream of the Cipolletti Weir (even though no willows were actually removed by the project) and replacement of one Ponderosa pine at a 1:1 ratio (DWR 2006). Locally-obtained willow cuttings were planted along the left bank of Big Grizzly Creek from the weir to the pedestrian bridge on Big Grizzly Creek (Figure 2). This work was also identified as fulfilling the compensatory mitigation for the ACOE Section 404 permit.

Figure 2. Left bank to be vegetated with willow cuttings in spring 2007



On April 5, 2007, after most of the winter snow had melted, DWR staff planted 40 local willow cuttings along the left bank of Big Grizzly Creek, at the water's edge (Figure 3), and ten two-year old Ponderosa pine seedlings were planted on the right and left banks above Big Grizzly Creek (Figure 4).

A DWR botanist assessed the status of the planted material on May 14, 2007. There appeared to be 100% willow cutting survival, although only a few had leafed out at the time of the visit (Figure 3), and 100% Ponderosa pine survival (Figure 4), and all plants appeared to be healthy. DWR will periodically check the progress during summer 2007 and will replant willows if necessary in fall 2007.

Figure 3. Local willow cuttings planted April 5, 2007 (left photo) and leafing out on May 14, 2007 (right photo).



Figure 4. Ponderosa pine planted (April 5, 2007 (left photo) and follow-up visit on May 14, 2007 (right photo).



## Environmental Monitoring Log

A log of monitoring activities was kept during construction, which included entries of date, time, monitor name, description of construction activities; description of which avoidance and construction areas were inspected, and any changes to the project plan. The Environmental Monitoring Log is available at the request of the regulatory agencies.

## **References**

- American Public Health Association. 1998. Standard methods for the examination of water and wastewater, 20<sup>th</sup> edition. American Public Health Association, American Water Works Association, and Water Environment Federation. Washington, D.C.
- Department of Water Resources. 2006. Mitigation and Monitoring Compliance for the Northern Pike Containment System at the Outlet of Lake Davis on Big Grizzly Creek May 2006. DWR, Division of Planning and Local Assistance, Sacramento, CA.